



### Editor-in-chief

Shyam Mohan, Dehradun

### Editor

Arun K. Arya, Dehradun

### Co-ordinator

C.B. Yadav, Dehradun

### Editorial Team

Mrinal K. Sen, University of Texas,  
S. Ramamurthy, Schlumberger  
Kalachand Sain, NGRI, Hyderabad  
J.V.S.S.N. Murthy, ONGC, Jorhat  
Satish Sinha, RGIPT, Raibareli  
H.K. Dixit, CGG Veritas  
P.K. Chaudhari, ONGC, Dehradun  
Rahul Dasgupta, OIL, Duliajan

### Geohorizons, SPG, India

1, Old CSD Building  
KDMIPE Campus, ONGC  
Kaulagarh Road,  
Dehradun - 248 195  
Phone : 91-135-2795536/2752088  
Fax : 91-135-2752088  
E-mail : spgindia@rediffmail.com  
Website: www.spgindia.org

### Printed at :

Allied Printers  
Nehar Wali Gali,  
Dehra Dun - 248 001  
Phone : 91-135-2654505

# GEOHORIZONS

Journal of Society of Petroleum Geophysicists, India

Vol 16, No. 2

## CONTENTS

January, 2012

|   |    |
|---|----|
| <b>PRESIDENT'S PAGE</b>   | 1  |
| <b>FROM THE CHIEF EDITOR'S DESK- SHYAM MOHAN</b>  | 2  |
| <b>GUEST EDITORS COLUMN - MRINAL K. SEN, DHANANJAY KUMAR</b>  | 4  |
| <b>TECHNICAL ARTICLES</b>   |    |
| ● Seismic Applications in the Exploration for and Development and Production of Unconventional Hydrocarbon Resources (An overview)<br><i>Robert H. Tatham</i>                                       | 5  |
| ● Overview of Rock Property Relationships and Characterization methods for Selected Oil and Gas Shales in North America<br><i>Kyle Spikes</i>   | 18 |
| ● Microseismic Monitoring for Unconventional Resource Development<br><i>Peter M. Duncan</i>   | 26 |
| ● Geophysical model response in a shale gas<br><i>Dhananjay Kumar and G. Michael Hoversten</i>  | 31 |
| ● Radiation pattern in homogeneous and transversely isotropic attenuating media<br><i>Satish Sinha, Sergey Abaseyev and Evgeni Chesnokov</i>  | 38 |
| ● Mass-transport complexes in deep water of Andaman Forearc Basin<br><i>Pinaki Basu, Rajeev Verma, Rajiv Paul and K. Viswanath</i>  | 46 |
| ● Application of Advanced Tools for Reservoir Characterization - EEI & Poisson's Impedance : A Case Study<br><i>Puja Prakash, S.K.Singh, Binode Chetia, P.K.Chaudhuri, Shyam Mohan and S.K. Das</i> | 50 |
| ● A Unique Methodology for Sub Basalt Imaging-Case Study<br><i>Brajesh Das and Mairaj Fatima</i>  | 56 |
| ● Image enhancement through conditioning of Vertical component data in OBC survey - A case study<br><i>S. Basu, Srilata Mohapatra, R.D. Chowdhary and D.P.Sinha</i>                                 | 61 |
| ● Time-Lapse Seismic*-Concept, Technology & Interpretation<br><i>Hemant Kumar Dixit, Akhil Puri and Rajat Rathore</i>   | 66 |
| ● Geophysical studies for Natural gas Hydrate in East seacoast of India<br><i>K. M. Shukla, A. K. Tyagi and P. K. Bhowmick</i>  | 73 |
| ● Authors' Biography ( <i>In alphabetical order</i> )   | 82 |
| <b>SPG NEWS</b>   |    |
| ● 20th SPG Foundation Day Lectures at Dehradun on August 15, 2011   | 85 |
| ● SPG India at SEG-2011 Conference at San Antonio   | 86 |
| ● SPG, India organized EAGE Education Tour-IV at Mumbai on Sept. 25, 2011   | 87 |
| ● SPG, Dibrugarh University Chapter was reorganized in a promising note   | 88 |
| ● Editorial Policy  | 89 |

**Geohorizons** is published by the Society of Petroleum Geophysicists (SPG), India. **Geohorizons** welcomes your contribution and articles on the latest researches and investigations in the field of petroleum geophysics, related geoscientific and engineering disciplines. News items about the Society, announcements and other features containing information of interest to the members of the Society are also welcome.

The statement of facts and opinions given in the articles published in the journal are made on the sole responsibility of author(s) and the Society or the editorial board cannot be held responsible for the same. **Please see the Editorial Policy in this issue for more information.**

Cover Photo : Rising Sun off Indian East Coast (contributed by Shri K.M. Shukla)